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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/916,566	07/27/2001	Jyoti Mazumder	POM-12502/29	1977

25006 7590 12/17/2003

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EXAMINER	
FRANK, ELLIOT L	

ART UNIT	PAPER NUMBER
2125	9

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PRE

Office Action Summary	Application No. 09/916,566	Applicant(s) MAZUMDER ET AL.	
	Examiner Elliot L Frank	Art Unit 2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 November 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED FINAL ACTION

Response to Amendment

1. This is a FINAL office action in response the applicant's amendment (B) filed 21 November 2003.
2. Corrections or explanations submitted in regard to items 1-7 and 9-12 of the previous office action have been considered and are accepted.
3. Item 8 in regards to the abstract does not appear to have been treated in this amendment and is repeated below.
4. Claims 1-8 remain pending in the application. There were no claims added or altered by the applicant in this amendment.
5. The following objections/rejections are maintained from the previous office action. A response to the applicant's arguments follows.

Specification

6. The abstract of the disclosure is objected to because it contains the purported merits of the invention. The abstract should be a short summary of the invention, 50-150 words in length. It should exclude the purported merits of the invention. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeantette et al. (USPN 6,046,426 A) in view of Kar et al. (USPN 6,526,327 B2).

The limitations of claims 1-8, and the relevant citations in Jeantette et al., are as follows:

1. A system for automatically controlling the build-up of material on a substrate (column 1, lines 10-14), comprising:

[a controllable semiconductor diode laser having a beam directed to a localized region of the substrate so as to form a melt pool thereon];

a material feeder for feeding material into a melt pool to be melted by the beam to create a deposit having a physical attribute (column 2, lines 10-36);

an optoelectric sensor operative to output an electric signal as a function of the physical attribute (column 8, lines 8-26); and

a feedback controller operative to automatically adjust the rate of material deposition as a function of the electric signal (column 10, lines 26-49).

2. The system of claim 1, wherein the feedback controller is operative to adjust the rate of material deposition by modulating the laser to control the power of the

beam (column 10, lines 1-25 wherein "the use of a continuously variable beam attenuator" as cited in line 22 is considered to be equivalent to modulating the laser).

Claims 3 and 4 requiring laser modulation in the kilohertz range, up to 20 kHz, would have been obvious to one of ordinary skill in the art at the time the invention was made depending on the bandwidth of the attenuation mechanism and the requirements of the application as supported by Jeantette et al. at column 10, lines 1-25 (specifically lines 23-25).

While Jeantette et al. allows for any laser with sufficient power to suffice as a laser source (column 9, lines 15-24), the reference does not recite the use of diode lasers in a laser material deposition system.

Kar et al. has been presented to show that the use of a diode laser in an analogous system (Kar et al., column 4, lines 11-48) was well known in the art at the time the invention was made. Kar et al. recites the use of such lasers at column 8, lines 44-49.

Method claims 5-8 contain the same functional limitations as system claims 1-4, and therefore are made obvious by the same citations in the combined references.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order

for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Response to Arguments

10. Applicant's arguments filed 21 November 2003 have been fully considered but they are not persuasive.

    a. The applicant has argued that the 35 U.S.C. 103 rejection is invalid because there is no motivation offered to have combined Jeantette et al. (USPN 6,046,426 A) in view of Kar et al. (USPN 6,526,327 B2).

    b. The examiner acknowledges the fact that no reason to combine was provided in the rejection, and further contends because the secondary reference was used only to demonstrate what was well known in the art at the time the invention was made, the rejection does not require motivation to combine.

    The rejection of Jeantette et al. in view of Kar et al. is not the combination of the novel features of two inventions in order to make obvious the limitations of the instant invention.

    Kar is merely provided to demonstrate that in an analogous laser processing system used in building composite parts (Kar et al., column 4, lines 11-48) a diode laser is but one of a multitude of known laser energy sources including CO_2, Nd:YAG, and the like available for this type of application. Therefore, the use of a diode laser in a laser processing system is not considered to be a novel aspect of the invention as claimed.

c. The applicant has made the argument that the use of a variable beam attenuator as cited in Jeantette et al. is simply a form of intensity control having nothing to do with frequency, modulation, duty cycle or the like.

d. The examiner respectfully disagrees with the applicant's interpretation of the claim limitation and applied prior art of record.

The limitation in claim 2 currently recites, "wherein the feedback controller is operative to adjust the rate of material deposition by modulating the laser to control the power of the beam." Given the definition of the word "modulation" is "the variation of a property of an electromagnetic wave or signal, such as its amplitude, frequency, or phase" (American Heritage Dictionary of the English language, www.dictionary.com), the broadest reasonable interpretation of this requirement is a controlling the laser power by altering a control signal using feedback.

The teaching in column 10, lines 1-25 explains a process wherein a feedback loop is implemented which uses an error signal to regulate the laser output power in a continuous fashion either through direct control of the laser power supply or through the use of a continuously variable beam attenuator. The method of laser power control will be dictated by the bandwidth of the attenuation mechanism. This is essentially the same process understood from the broadest reasonable interpretation of the claim.

Therefore, the process described in Jeantette et al. is considered to read on the limitation of claim 2.

e. The applicant states that there is no evidence that the Jeantette et al. system can operate in the kilohertz range.

f. The examiner respectfully disagrees.

Per column 10, lines 1-25, the Jeantette et al. system preferably operates with a response time of less than 1 ms. This means that the system has a frequency response of 1kHz or greater, which would make obvious the requirements of the instant invention.

Conclusion

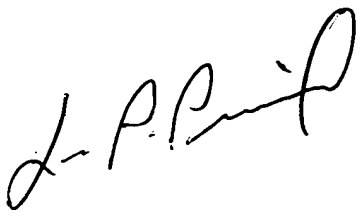
11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elliot L Frank whose telephone number is (703) 305-5442. The examiner can normally be reached on M-F 7-4:30, 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P Picard can be reached on (703) 308-0538. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-5484.



ELF
December 12, 2003